

CLAIMS

What is claimed is:

1. A method comprising:
expanding a graphite material from a first density to a smaller second density; and
following expansion, purifying the graphite material.
2. The method of claim 1, wherein the graphite material comprises a natural graphite flake.
3. The method of claim 1, wherein expanding a graphite material comprises:
combining the graphite material with an intercalating agent.
4. The method of claim 3, wherein the intercalating agent is nitric acid.
5. The method of claim 4, wherein expanding the graphite material comprises:
combining the graphite material and the intercalating agent at a graphite material to intercalating agent at a ratio of about three to one.
6. The method of claim 3, wherein expanding the graphite material comprises, after combining the graphite material with the intercalating agent, subjecting the graphite material to a thermal treatment.
7. The method of claim 6, further comprising:
prior to purifying, compacting the graphite material.
8. The method of claim 6, wherein the thermal treatment comprises a first thermal treatment and purifying the graphite comprises subjecting the graphite material to a second thermal treatment under vacuum at a temperature in the range of 1500 to 3000°C.

9. The method of claim 8, wherein subjecting the graphic material to a second thermal treatment further comprises introducing an auxiliary gas into the vacuum environment.
10. The method of claim 9, wherein the auxiliary gas comprises chlorine.
11. The method of claim 1, further comprising:
following purifying, one of grinding and compacting the graphite material.
12. The method of claim 1, further comprising:
following purifying, compacting the graphite material; and
following compacting, grinding the graphite material.
13. A method comprising:
expanding a graphite material;
following expansion, compacting the graphite material; and
following compaction, purifying the graphite material.
14. The method of claim 13, wherein expanding a graphite material comprises:
combining the graphite material with an intercalating agent.
15. The method of claim 14, wherein the intercalating agent is nitric acid.
16. The method of claim 15, wherein expanding the graphite material comprises:
combining the graphite material and the intercalating agent at a graphite material to intercalating ratio of about three to one.
17. The method of claim 13, wherein expanding the graphite material comprises, after combining the graphite material with the intercalating agent, subjecting the graphite material to a first thermal treatment.

18. The method of claim 17, wherein purifying the graphite material comprises a second thermal treatment and the second thermal treatment comprises purifying under vacuum at a temperature in the range of 1500 to 3000°C.
19. The method of claim 17, wherein subjecting the graphic material to a second thermal treatment further comprises introducing an auxiliary gas into the vacuum environment.
20. The method of claim 19, wherein the auxiliary gas comprises chlorine.
21. The method of claim 13, further comprising:
following purifying, one of grinding and compacting the graphite material.
22. The method of claim 13, further comprising:
following purifying, compacting the graphite material; and
following compacting, grinding the graphite material.
23. The method of claim 13, wherein the graphite material comprises a natural graphite flake.
24. An article of manufacture comprising graphite formed according to a method comprising:
expanding a graphite material from a first density to a smaller second density; and
following expansion, purifying the graphite material.
25. The article of manufacture of claim 24, wherein expanding a graphite material comprises:
combining the graphite material with an intercalating agent.
26. The article of manufacture of claim 25, wherein the intercalating agent is nitric acid.

27. The article of manufacture of claim 24, wherein the graphite material comprises a natural graphite flake.

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